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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/477,371	01/06/2000	MING-TANG CHANG	2461-60	9152

7590 02/07/2002

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EXAMINER

COLLINS, CYNTHIA E

ART UNIT	PAPER NUMBER
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1638

DATE MAILED: 02/07/2002

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/477,371

Applicant(s)

CHANG ET AL.

Examiner

Cynthia Collins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2000 and 26 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 3-13, 15, 16, 19, 20 and 22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 14, 17, 18, 21 and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group I, claims 1-2, 14, 17-18, 21 and 23, in Paper No. 8 is acknowledged. The traversal is on the ground(s) that a search of all the claimed subject matter would not be an undue burden on the Examiner. This is not found persuasive because while the search of Group I may overlap with the search of Groups II-VII, their searches are not coextensive of each other. In this particular instance, a search of Group I is not coextensive with a search of Groups II-VII, since Groups II-VII require additional searches for feed, a method of increasing bioavailability of phosphorous, corn germplasm, an inbred corn line, a hybrid corn line, and a seed, all of which are not claimed in Group I.

The requirement is still deemed proper and is therefore made FINAL.

Information Disclosure Statement

An initialed and dated copy of Applicant's IDS form 1449, Paper No. 5, is attached to the instant Office action.

Specification

This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

The disclosure is objected to because of the following informalities: An Accession No. is omitted on page 8 line 16. Data is omitted from the table spanning pages 37-38. Additionally, the units of measure are not specified for the data in the table spanning pages 37-38.

Appropriate correction is required.

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Claim Objections

Applicant is advised that should claim 21 be found allowable, claim 23 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-2, 14, 17-18 and 21-23^{and} are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Since seed claimed is essential to the claimed invention, it must be obtainable by a repeatable method set forth in the specification or otherwise be readily available to the public. If a seed is not so obtainable or available, the requirements of 35 U.S.C. 112 may be satisfied by a deposit thereof. The specification does not disclose a repeatable process to obtain the exact same seed in each occurrence and it is not apparent if such seed is readily available to the public. If the deposit of seed is made under the terms of the Budapest Treaty, then an affidavit or declaration by the applicants, or a statement by an attorney of record over his or her signature and registration number, stating that the seed will be irrevocably and without restriction or condition

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released to the public upon the issuance of a patent would satisfy the deposit requirement made herein. A minimum deposit of 2500 seeds is considered sufficient in the ordinary case to assure availability through the period for which a deposit must be maintained.

If the deposit has not been made under the Budapest Treaty, then in order to certify that the deposit meets the criteria set forth in 37 CFR 1.801-1.809, applicants may provide assurance of compliance by an affidavit or declaration, or by a statement by an attorney of record over his or her signature and registration number showing that:

- (a) during the pendency of the application, access to the invention will be afforded to the Commissioner upon request;
- (b) all restrictions upon availability to the public will be irrevocably removed upon granting of the patent;
- (c) the deposit will be maintained in a public depository for a period of 30 years or 5 years after the last request or for the enforceable life of the patent, whichever is longer;
- (d) the viability of the biological material at the time of deposit will be tested (see 37 CFR 1.807); and
- (e) the deposit will be replaced if it should ever become inviable.

Claims 1-2, 14, 17-18 and 21-23 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. While one skilled in the art can readily perform EMS mutagenesis on pollen to obtain non-lethal mutant seed, the effect of EMS mutagenesis on the oil, protein, and phytic acid content of mutant seed is highly unpredictable. EMS mutagenesis is nonspecific. The

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identity and number of genes altered by EMS treatment cannot be controlled or predicted.

Consequently, the phenotypes that result from EMS mutagenesis also cannot be controlled or predicted.

The claims are drawn to non-lethal mutant cereal seed having at least 5% by weight oil, at least 11% by weight protein and at least a one third reduction in phytic acid.

However, in the instant disclosure, Applicants teach only a method for EMS mutagenesis of maize pollen (Example 3 pages 31-32), a method for testing the phytate content of seed (Example 3 pages 31-36), and three specific low phytate maize mutants made by EMS mutagenesis, UU01-py, UO95-py, WD22-py (Example 3 page 37). The specification also discloses the difference in phytic acid content of wild-type and mutant seed (table page 37 lines 16-19). Additionally, the specification discloses that wild-type UO95 has "higher than average protein and oil levels", and that the protein, oil, and phytate content of wild-type and mutant seed vary, (table spanning pages 37-38), but the units of measure for the protein, oil, and phytate content are not disclosed. The specification does not disclose any examples of non-lethal mutant cereal seed having at least 5% by weight oil, at least 11% by weight protein and at least a one third reduction in phytic acid. The specification does not provide any definitive evidence that EMS mutagenesis of maize pollen will result mutant seed having the phenotypic characteristics of the claimed invention. Additionally, the specification does not provide any definitive evidence that EMS mutagenesis of pollen from cereal plant species other than maize will result mutant seed having the phenotypic characteristics of the claimed invention. With respect to the claimed invention, maize is not necessarily representative of all cereal plant species.

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Given the unpredictability of altering the phenotype seed by EMS mutagenesis, the absence of guidance in the specification for altering the protein, oil, and phytate content of seed by EMS mutagenesis, the lack of working examples, and given the breadth of the claims which encompass any non-lethal mutant seed of a cereal plant species having at least 5% by weight oil, at least 11% by weight protein and at least a one third reduction in phytic acid, it would require undue experimentation by one skilled in the art to make and/or use the claimed invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2, 14, 17-18, 21 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2, 14, 17-18, 21 and 23 are indefinite in the recitation of the indefinite article "A" before "seed". It is suggested that the claims be amended to recite "The seed".

Claims 21 and 23 are indefinite in the recitation of " at least 9% protein". Claims 21 and 23 are drawn to a seed according to claim 1. The seed of claim 1 has at least 11% by weight protein. It is unclear how a seed having at least 11% by weight protein can also have "at least 9% protein". A seed having at least 11% by weight protein does not have less than 11% protein.

Remarks

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Collins whose telephone number is (703) 605-1210.

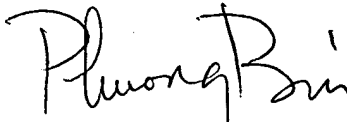
The examiner can normally be reached on Monday-Friday 8:45 AM -5:15 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson can be reached on (703) 306-3218. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-4242 for regular communications and (703) 308-4242 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

CC
February 6, 2002


PHUONG T. BUI
PRIMARY EXAMINER